

Patent claims

1. An automatic cycle storage system comprising:
- a plurality of cycles (1), each carrying a locking device (9) and an electronic control circuit (23),
  - a plurality of locking stations (8) onto which the locking devices (9) of the cycles can be locked when they are not in use,
  - and at least one control device (2) adapted to selectively enable the borrowing of cycles (1) from at least some locking stations (8), the control device (2) being adapted to interact with the electronic control circuit (23) of a cycle locked onto a locking station (8) corresponding to said control device,
- wherein** at least some of the locking stations (8) comprise an electrical power source (35) and a first electrical power supply interface (33) adapted to transfer electrical power from the electrical power source (35) to a cycle (1) locked onto said locking station,
- wherein** at least some of the cycles (1) are electrically propelled cycles, each comprising an electric propulsion motor (38) supplied by a main battery (37), the main battery being connected to a recharging circuit (36) controlled by the electronic control circuit (23), said recharging circuit (36) being connected to a second electrical power supply interface (34) which is adapted to receive electrical power from the electrical power source (35) via the first electrical power supply interface (33) when the cycle (1) is locked onto the locking station (8),
- and wherein** the electronic control circuit (23) is adapted to determine whether the cycle (1) is locked onto the locking station (8) and to enable the recharging circuit (36) to operate to charge the main battery (37) only if the cycle (1) is locked onto the locking station (8).

2. The system as claimed in claim 1, in which the electronic control circuit (23) is adapted to enable the recharging circuit (36) to operate to charge the main battery (37) only after a predetermined dialogue  
5 with the control device (2) when the cycle (1) is locked onto the locking station (8).

3. The system as claimed in claim 1 or claim 2, in which the locking device (9) of the cycle interacts  
10 with a complementary locking device (10) belonging to the locking station (8), the first and second electrical power supply interfaces (33, 34) being fixed respectively to the complementary locking device (10) and the locking device (9).

15 4. The system as claimed in claim 3, in which the locking device (9) and the complementary locking device (10) are adapted to interact by fitting into each other, thus masking the first and second electrical  
20 power supply interfaces (33, 34) when the cycle (1) is locked onto the locking station (8).

5. The system as claimed in any one of the preceding claims, in which the control device (2) is  
25 adapted to control the electrical power source (35) and to supply said first electrical power supply interface (33) with electrical power only if the cycle (1) is locked onto the locking station (8).

30 6. The system as claimed in any one of the preceding claims, in which the locking station (8) comprises an anchoring member (10), and the locking device (9) of each cycle has an electric bolt (14) controlled by the electronic control circuit (23) of  
35 the cycle and adapted to be locked onto the anchoring member (10).

7. The system as claimed in claim 6, in which the anchoring member (10) comprises identification means

(24) readable by the electronic control circuit (23) of the cycle.

8. The system as claimed in any one of the preceding claims, in which the control device (2) has a first short-range wireless communication interface (29), the cycle has a second short-range wireless communication interface (30) adapted to communicate with the first communication interface (29), this second communication interface (30) being connected to the electronic control circuit (23) of the cycle, and the control device (2) is adapted to control the locking device (9) of each cycle via the first communication interface (29) and the second communication interface (30).

9. The system as claimed in claim 8, in which the first and second communication interfaces (29, 30) are radio communication interfaces.

10. The system as claimed in any one of the preceding claims, in which the electrical power source (35) delivers a low voltage.

11. System as claimed in any one of the preceding claims, in which the recharging circuit (36) is adapted to supply a secondary battery (39) as long as an electrical voltage is present at the second power supply interface (34), said secondary battery (39) supplying the electronic control circuit (23).

12. The system as claimed in any one of the preceding claims, in which the control device (2) is adapted to communicate with the electronic control circuit (23) of the cycle by carrier current modulation, via the first and second electrical power supply interfaces (33, 34).

13. A cycle for a system as claimed in any one of the preceding claims, this cycle having:

- a locking device (9),
  - an electronic control circuit (23),
  - 5 - an electric propulsion motor (38) adapted to propel the cycle (1),
  - a main battery (37) supplying the electric motor (38),
  - a recharging circuit (36) controlled by the
  - 10 electronic control circuit (23) and connected to the main battery (37),
  - an electrical power supply interface (34) connected to said recharging circuit (36) and adapted to receive electrical power from an external electrical power
  - 15 source (35) when the cycle (1) is locked onto a locking station (8),
- the electronic control circuit (23) being adapted to determine whether the cycle (1) is locked onto the locking station (8) and to enable the recharging
- 20 circuit (36) to operate to charge the main battery (37) only if the cycle (1) is locked onto said locking station (8).